REMARKS

This application has been carefully reviewed in light of the Office Action dated February 9, 2006. Claims 4-6, 8-11, 13-15 and 17-19 remain pending in this application. Claims 4, 5, 13 and 14 are the independent claims. Claims 4-6, 8-11 have been amended. Claims 1, 2, 3, 7, 12, 16 and 20-25 have been canceled without prejudice. It is believed that no new matter is involved in the amendments or arguments presented herein. Reconsideration and entrance of the amendment in the application are respectfully requested.

Non-Art Based Rejections

In Office Action dated August 16, 2006, Claims 4-6 and 8-11 were rejected under 35 U.S.C. § 112, first paragraph, relating to written description. In particular, the Office Action asserts those claims are directed to transparent electrode including Mg-doped ZnO, and the Specification of present application does not disclose that.

In response, Claims 4-6 and 8-11 have been amended to direct to electrode structures including an electrode having ZnO and the Mg-doped ZnO film. The claims as amended are believed to comply to the requirements of § 112, first paragraph. Reconsideration and allowance of Claims 4-6 and 8-11 are thus respectfully requested.

Art-Based Rejections

Claims 4, 6, 10, 11, 13-15, and 19 were rejected under 35 U.S.C. § 103(a) over U.S. Patent Pub. No. 2002/0126719 A1 (Kadota) in view of WO 02/89223 (Ishizaki); claim 5 was rejected under § 103(a) over Kadota in view of Ishizaki and U.S. Patent No. 6,084,899 (Shakuda); Claims 8-9 and 17-18 were rejected under § 103(a) over

Kadota in view of Ishizaki as applied to claim 13, and further in view of U.S. Patent No. 6,787,435 B2 (Gibb).

Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the arguments below.

The Kadota Reference

Kadota is directed to a semiconductor photonic device having GaN-based compound semiconductor layer as an active buffer layer (*Kadota; para. [0002]).*

The Ishizaki Reference

Ishizaki is directed to a method of fabricating a light emitting device having a light emitting layer portion which includes a p-type $Mg_xZn_{1-x}O$ layer. The p-type $Mg_xZn_{1-x}O$ layer is grown by a metal organic vapor-phase epitaxy process while supplying organometallic gases, an oxygen component source gas and a p-type dopant gas into a reaction vessel, and is annealed during and/or after completion of the growth thereof in an oxygen-containing atmosphere (*Ishizaki; para. [0015]*).

The Shakuda Reference

Shakuda is directed to a semiconductor light emitting device of double hetero junction including an active layer and clad layers. The clad layers include an n-type layer and p-type layer. The clad layers sandwich the active layer. A band gap energy of the clad layers is larger than that of the active layer. The band gap energy of the n-type clad layer is smaller than of the p-type clad layer (*Shakuda; Abstract*).

The Gibb Reference

Gibb is directed to a light-emitting element. According to Gibb, a light emitting diode (LED) includes a sapphire substrate (26) having front and back sides (33, 35), and a plurality of semiconductor layers (28, 30, 32) deposited on the front side (33) of the sapphire substrate (26). The semiconductor layers (28, 30, 32) define a light-emitting structure that emits light responsive to an electrical input. A metallization stack (40) includes an adhesion layer (34) deposited on the back side (35) of the sapphire substrate (26), and a solderable layer (38) connected to the adhesion layer (34) such that the solderable layer (38) is secured to the sapphire substrate (26) by the adhesion layer (34). A support structure (42) is provided on which the LED is disposed. A solder bond (44) is arranged between the LED and the support structure (42). The solder bond (44) secures the LED to the support structure (42). (*Gibb; Abstract*).

The Claims are Patentable Over the Cited References

The present application is generally directed to light emitting devices having transparent electrodes that inhibit degradation.

As defined by amended independent Claim 4, an electrode structure includes a transparent electrode including ZnO. An Mg-doped ZnO film formed on the electrode. The electrode is disposed on a semiconductor device.

The applied references do not disclose or suggest the features of present invention as recited in the claims. In particular, the applied references do not disclose or suggest "a transparent electrode including ZnO" recited in amended independent Claim 4. Moreover, the applied references do not disclose or suggest "an Mg-doped ZnO film formed on the electrode" recited in that claim.

Kadota teaches a p-type electrode **10** and n-type electrode **9** (*Kadota at [0029]; FIG. 2; also see FIG. 2, reference elements 27 and 26; FIG. 4 reference elements 50 and 49; FIG. 5, reference elements 57 and 56*).

However, Kadota is silent about the electrodes **9** and **10** containing ZnO as recited in amended independent Claim 4, let alone the Mg-doped ZnO film forming on the electrode. Accordingly, Kadota fails to teach the features of amended independent Claim 4.

Ishizaki teaches a metal electrode **122** and an electrode having ITO **125** (*Ishizaki at [0172]; FIG. 13; also see FIG. 21, reference elements 223 p-type electrode and 224 n-type electrode; FIG. 22 reference elements 222 and 225*).

However, Ishizaki is silent about the electrodes containing ZnO as recited in amended independent Claim 4, let alone the Mg-doped ZnO film forming on the electrode. Accordingly, Ishizaki fails to teach the features of amended independent Claim 4.

Shakuda teaches electrodes including Au or Au and Zn. (*Shakuda at col. 3, lines 38039; FIG. 1, reference elements 8 and 9*).

However, Shakuda is silent about the electrodes containing ZnO as recited in amended independent Claim 4, let alone the Mg-doped ZnO film forming on the electrode. Accordingly, Shakuda fails to teach the features of amended independent Claim 4.

Gibb teaches electrodes (called contact in Gibb) including gold, silver, or tin. (*Gibb at col. 4, lines 26-27; FIG. 1, reference elements 19; FIG. 2 reference elements 46 and 48*).

However, Gibb is silent about the electrodes (contact) containing ZnO as recited in amended independent Claim 4, let alone the Mg-doped ZnO film forming on the electrode. Accordingly, Gibb fails to teach the features of amended independent Claim 4.

Since the applied references fail to disclose, teach or suggest the above features recited in amended independent Claim 4, those references cannot be said to anticipate or render obvious the invention which is the subject matter of that claim.

Accordingly, independent Claim 4 as amended is believed to be in condition for allowance and such allowance is respectfully requested.

Applicant respectfully submits that independent Claims 5, 13, and 14 reciting similar features are allowable for the least the same reasons as those discussed in connection with amended independent Claim 4.

The remaining claims depend either directly or indirectly from the independent claims, and recite additional features of the invention which are neither disclosed nor fairly suggested by the applied references are therefore also believed to be in condition for allowance. Such allowance is respectfully requested.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (310) 785-4721 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
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